

1 Preface

Basic research is always closely connected with experiments. Of course this applies particularly to experimental physics. In this context data collection can be seen as the final output of measurements. But basic research is also done in theoretical and computational physics. Today simulations can already be called 'measurements'. In this context data collection serves as input parameter. Generally, results in the form of data collections are the link between all different fields of science.

In the field of high temperature thermophysics only a few experimental methods deliver data from more than 1000 degrees above the melting point. As in fast pulse-heating the high temperature region is the focus of interest, we consider these results worth being published as a compilation. The large temperature range makes this compilation *the hottest collection in the world*.

Under the supervision of Prof. Pottlacher, the workgroup of subsecond thermophysics at the TU Graz has been working on investigations of metals for more than 30 years. The key features of the measurements have not changed during this time. Hence, the results were obtained under quite homogeneous conditions, which is a valuable point concerning comparison and argumentation. We tried to keep this uniformity in the presentation of the data by selecting only standard quantities to be displayed: volume expansion, specific enthalpy, and electrical resistivity as a function of temperature. Thermal conductivity and thermal diffusivity may be calculated from the given polynomials and the formulas (4) and (5). Additional information and properties can be found in the original publications, which are thoroughly cited.